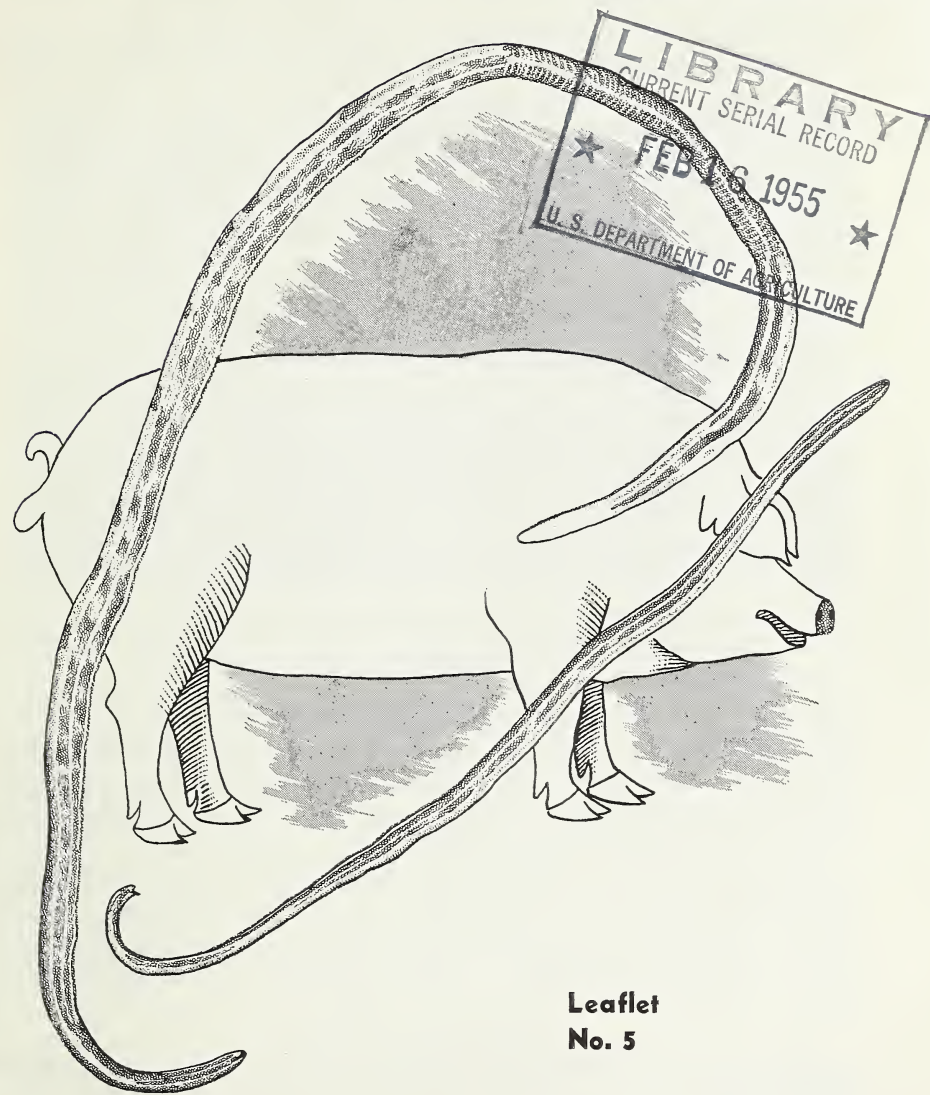


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PREVENTION OF **ROUNDWORMS** IN PIGS



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U. S. DEPARTMENT OF AGRICULTURE

PREVENTION OF ROUNDWORMS IN PIGS

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SWINE are plagued by numerous species of roundworms. Among them are large intestinal roundworms (ascarids), nodular worms, whipworms, stomach worms, lungworms, kidney worms, and intestinal threadworms, all of which are liable to be injurious to the pig that harbors them. Roundworms range in length from about one-sixth of an inch, to 10 inches or more, and from the size of a thread to that of a lead pencil. The largest, most widespread, and perhaps the most injurious is the ascarid.

Damage Done by Ascarids

Adult ascarids (large intestinal roundworms) may cause digestive troubles, retard growth and development, and in other ways interfere with the well-being of swine, especially young pigs. Female ascarids produce eggs which pass out of the pig in the droppings. When the eggs are swallowed by the pig they hatch in the small intestine.

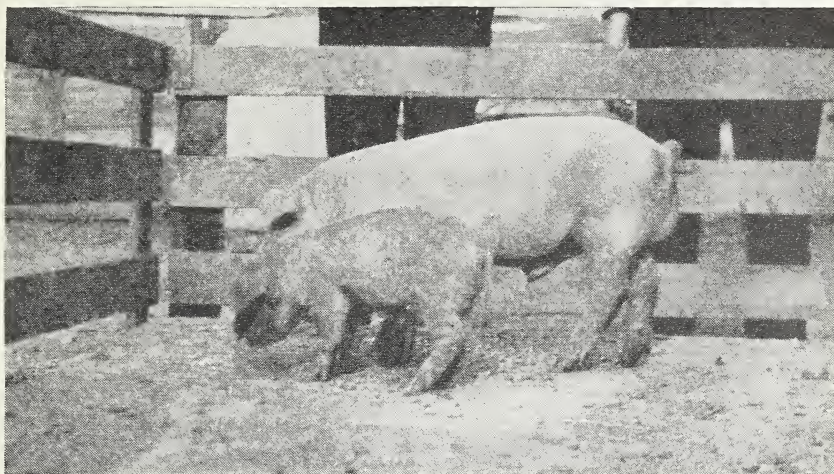
The young ascarids, while still too small to be seen with the naked eye, travel in the blood stream to the liver and then to the lungs. Here they leave the blood vessels and enter the air passages, go up the windpipe to the mouth, are swallowed, and return to the intestine, where they develop to adult worms in about 2 months or less. If many young ascarids make this trip at the same time, as often happens, the pig may show symptoms commonly known as thumps, and may die of pneumonia. Perhaps most cases of thumps in little pigs are caused by ascarid infestations, although a thumping cough in young pigs has sometimes been attributed to an overfat condition, or to cold weather and resulting lack of exercise.

Pigs that survive a severe invasion of the lungs by young ascarids frequently do not recover fully and fail to grow at a normal rate. Small white spots (scars) frequently occur on the livers of pigs that have swallowed ascarid eggs. Severely damaged livers are unfit for food.

¹ This is a revision of former editions by B. H. Ransom, M. C. Hall, and H. B. Raffensperger.

To determine how much ascarids retard the growth of weanlings, some pigs were experimentally infested, while their littermates were not. When the pigs were slaughtered about 4 months later, the weights of the infested pigs ranged from 49 to 54 pounds less than those of the littermates that had no worms (fig. 1). The pigs that harbored the most worms gained the least, and a pig that harbored as many as 100 worms lost weight and died.

Pigs are more susceptible to and suffer most seriously from ascarids during the first few weeks of life. As pigs grow older they generally become more resistant, harbor fewer worms, and suffer less from both the young worms in the lungs and the older ones in the intestines. Little pigs, therefore, require special protection.



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Figure 1.—Littermate pigs. The one on the left is infested with ascarids; the other is normal and healthy.

How Pigs Acquire Ascarids

Pigs become infested with these roundworms by swallowing the eggs of the parasite. The eggs, too small to be seen without a microscope, are in the droppings of infested pigs, and on and in soil of places that have been occupied by infested swine. It has been estimated that 1 full-grown ascarid in the intestine of a pig may lay as many as 250,000 eggs a day. At the time they are passed out of the body of the hog, the eggs are not infective. Within a few weeks or months, depending on the weather and other conditions, the eggs develop to a stage at which each contains a tiny worm. At this stage they are ready to infect the pig that swallows them.

The eggs are resistant to cold and drought, and are not killed by most chemical disinfectants. They have been known to live at least

3 years in soil plowed each year and planted to corn or other crops. Not all hogs harbor ascarids, even though kept on contaminated soil. Generally, however, they are in about 1 out of 3 hogs of breeding age.

From the foregoing it is evident that the soil of places occupied by hogs is likely to contain enormous numbers of ascarid eggs and, in view of their food habits, pigs kept in such places may become heavily infested. Young pigs are especially susceptible. Largely on account of worms, many young pigs are lost or fail to grow properly when reared under ordinary methods of hog management. Unthriftness is generally caused by poor breeding, poor feeding, or parasites. If the first two factors can be ruled out, the trouble is more than likely caused by parasites.

Swine-Sanitation System

A system of raising pigs to avoid infestations with ascarids and other roundworms, or at least to reduce the infestations to a point at which they will cause little damage, has been worked out in experiments by the Bureau of Animal Industry. This system not only prevents losses from worms, but also almost completely prevents various "filth diseases," such as bullnose, sore mouth, and certain forms of diarrhea. It cannot be depended on to prevent hog cholera, however, and even though this system is followed, hog-cholera immunization should be continued in accordance with approved methods of control.

The swine-sanitation system consists in handling young pigs from birth to several months of age in a way that avoids or reduces their chances of getting worms. Essentially, it keeps young pigs entirely away from old hog lots or places contaminated with feces.

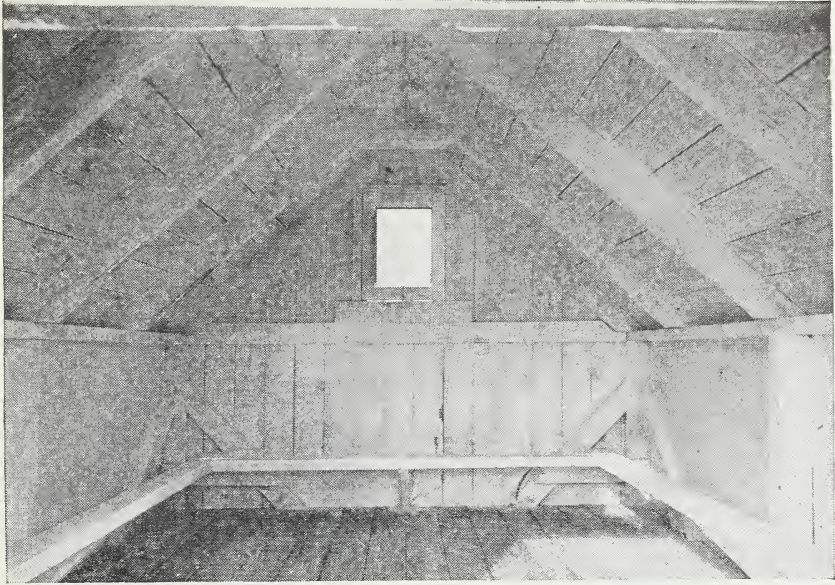
The following benefits resulting from the use of swine sanitation system have been reported by farmers: The farmer can raise as many pigs from 2 sows as are raised from 3 under dirty hog-lot conditions; pigs are ready for market 4 to 8 weeks earlier, with accompanying saving in feed and care; and the pigs in a herd are of uniform size and quality, with practically no runts.

The control of kidney worms requires certain modifications of the system outlined here. See Leaflet 108, Controlling Kidney Worms in Swine in the Southern States.

Farrowing Pens

Farrowing pens should be so constructed as to be easily kept clean. In the spring before farrowing time, clean the pens thoroughly (fig. 2). Remove the litter and thoroughly scrub the concrete or wooden floors, troughs, guardrails, and sides of pens with boiling water and lye. The water, if applied liberally and very hot, is destructive to

worm eggs, and the lye helps to remove both dirt and worm eggs. Shut off indoor pens from outside pens that are built in connection with permanent hog houses, unless these outside pens have concrete or wooden floors and are thoroughly cleaned before the sows and pigs have access to them. If the building is not artificially heated, it should be cleaned in the fall, before freezing weather, as it may be almost impossible to clean the pens properly during the cold weather of early spring or late winter.



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Figure 2.—Interior of house for sow and litter, properly cleaned and disinfected.

Care of Sows and Pigs

Place sows in clean pens a few days before farrowing but not before removing the mud and dirt from their skins. Their udders particularly should be washed well with soap and water, and their feet should also be washed. If the sows are not clean, they may carry eggs and disease germs from the soil of hog yards, so that even with the first few mouthfuls of milk newborn pigs may swallow many worm eggs and disease germs.

Keep the sows and pigs in the farrowing pen until the pigs are a few days to 2 weeks old, then haul them to pasture so that they will have no chance to pick up worms on the way. For moving them, a "barnyard Pullman" consisting of a double crate on a sled (fig. 3) may be used. It can be placed at the door of the pen for loading.

The lower compartment is for the sow, the upper for the pigs. Also, with a loading chute they can be moved in a pickup truck, or in a crate pulled with a tractor.

If pigs are farrowed in the fall, the same system with slight modifications may be followed. A permanent farrowing house need not be used. If the sows have been running on pasture and are not encrusted with mud and filth, they may be transferred directly, without washing, to the special pasture, and farrowing can take place in individual houses in this pasture. Except in northern regions, pigs farrowed at the very beginning of fall or at the end of summer will be past the age of greatest susceptibility to worm infestation before they must be put in winter quarters, which are likely to be contaminated. This system is suitable for both spring and fall farrowing in the South.



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Figure 3.—A double-decked crate for hauling the sow and little pigs from the farrowing pen to the pasture. The sow rides below and the pigs above.

Pastures

Provide a special pasture for the sows and young pigs. It should not be a permanent pasture which has been much used by hogs and is therefore contaminated with their droppings, but a field that has been under cultivation and sown to a suitable forage crop, such as oats or rye. Also, legume pastures in the normal course of crop rotation may be utilized, a different field being devoted each year to this purpose. Individual shelter houses for each sow and her litter should be provided in the pasture, helping to keep the various sows and their litters apart. Although one house may be used for all the

sows and pigs, this plan is not desirable, as it tends to concentrate any infection that may be present.

No other hogs should have access to the pasture, nor should the pigs be allowed to run from the pasture back to the barn lot or hog yards. If these recommendations are strictly followed, lungworm infestation will be greatly reduced, if not altogether eliminated.

Pigs should be kept away from contaminated places until they are at least 4 months old, or until they weigh about 100 pounds, after which they are not liable to suffer seriously from worm infestation, even though exposed. It is, however, a very good practice to keep pigs away from dirty hog lots and on clean pasture until they are ready to be fattened for market.

If there is much difference in the ages of the various litters, the pigs should be placed in several pastures according to age, or in one subdivided pasture. If pigs of widely differing ages are run together, the older pigs may rob the younger ones, so that the latter do not have a chance to get all the nourishment necessary for proper growth.

Care should be taken to keep clean, dry bedding in shelter houses. Some hog raisers move shelter houses from time to time and burn the old bedding. The location of the feeding ground should be shifted occasionally, the surroundings of the water supply kept sanitary, and wallowing in mud prevented.

Clean water should be supplied in sanitary watering devices that do not cause mud wallows to form around them. The water can be replenished by piping or by hauling.

Temporary shade may be built in the pasture if natural shade is not available.

Permanent Hog Lots Dangerous

Arrange yards that are much used by hogs so that a change to fresh ground can be made every year or two. The old ground should be plowed, turning under the surface infection, and a crop should be sowed. Allow the surface to become firm before using the yard again for hogs. Select for hog yards places that will provide proper drainage, and that can be maintained in a sanitary condition. Keep them as free as possible from the common type of mud wallow which often becomes a source of disease (fig. 4). Mud wallows can usually be replaced at comparatively small expense with shallow concrete wallowing tanks so constructed as to be easily kept clean. Such a tank can also be used to apply remedies for lice and mange.²

² Farmer's Bulletin 1085, Hog Lice and Hog Mange.



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Figure 4.—A place where drainage is inadequate and therefore unsuitable for a permanent hog pasture.

Skim-Milk Diet Supplements Sanitation

In addition to practicing swine sanitation, give pigs fluid skim milk to keep them free of roundworms. Milk or whey may be fed once daily instead of a grain feeding, or it may be fed instead of all other feed and water for periods of 3 days at intervals of 2 weeks. Pigs so fed remain either entirely free of worms or nearly so. Furthermore, they gain more rapidly than pigs fed only grain.

Steps in Controlling Roundworms

With shovel and brush, remove all litter and trash from the farrowing pens and thoroughly clean them with hot water, soap, and lye.

A few days before her farrowing time scrub the sow thoroughly with a brush, using soap and warm water to remove dirt and worm eggs. Pay especial attention to the udder, but be sure that all parts of the body are clean, including the feet. Then put the clean sow into the clean farrowing pen.

Ten days or so after farrowing, haul (don't drive) the sow and little pigs to a clean pasture containing a suitable forage crop on which there have been no pigs since the crop was sown. Keep the other pigs away from this pasture and keep these pigs away from dirty hog lots.

Provide plenty of shelter and shade and a fresh, safe water supply.

Leave the pigs on the pasture until they are at least 4 months old or have attained an average weight of 100 pounds. When possible, leave them there until they are ready to be fattened for market.

